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“Education 2.0”

If you need proof that technology has dramatically altered nearly every facet of modern life, look no further than the classrooms of your local public school. Dusty chalkboards and clattering reel-to-reel film projectors have been replaced by interactive whiteboards, electronic textbooks, and the latest in collaborative Internet applications. In the 21<sup>st</sup> century, education has gone digital.

At schools across the country, teachers and administrators at all grade levels are finding that new technologies are helping to create a host of opportunities for learning and enrichment, along with varied concerns about funding, training, and safety. By utilizing tools such as online research databases, Web video, wikis, videoconferencing, and virtual communities like Second Life, educators are seeking to present information to students in more compelling, interactive ways, and to ensure that these students will have the tech skills necessary to enter the modern workforce.

David Phillips is one educator who has embraced the possibilities offered by integrating technology into the classroom. As a media specialist and English teacher at Prairiland High School in Northeast Texas, Phillips has worked to introduce computers and the Internet to teachers and students alike. He said that while some older teachers, in particular, have been reluctant to alter the teaching methods they've used for decades, there is no room for hesitation when it comes to preparing students for the future.

“My short argument for these teachers would be: is your student going to be living in the same world you were living in 15 years ago?” Phillips said. “And if not, are they going to have to use these kinds of tools and be able to learn with these tools in their future jobs? If they are going to have to use these kinds of tools to learn their future jobs, then we need to be using these tools to teach them now.”

As an example, Phillips cited a “how-to” assignment which his students completed on paper in previous years. Today, however, the students use a computer screenshot program called Snag-It

along with Microsoft Publisher to create electronic tutorials on topics like uploading images from a digital camera. The tutorials are then archived and made available to Phillips' other students as they work on related assignments, like digital photo essays. The goal is to have students become familiar enough with the technology that they can communicate it to others and teach the rest of the class, Phillips said.

"One of the things that happens in the class is they collaborate really well, so that if somebody knows how to make a video and someone else doesn't, the one who knows how do it jumps over and helps the one who doesn't, and they get the job done," said Phillips. "Basically, my students love this stuff. One of the coolest things is they think they're having fun with technology when they're actually learning – which is the best way to teach that I know of."

Other technologies used by Phillips' students include an online research database called Ebsco to aid in writing papers, Google Notebooks and Google Documents for sharing notes and collaborating on group assignments, and Microsoft PowerPoint – also central to the focus on student presentations. Next semester, Phillips plans to begin using Ning, a social networking Web site which will allow students to discuss and analyze class readings and other assignments via the Internet.

According to Marlene McGarrity, who teaches at a public middle school for gifted and talented students in Brooklyn, New York, most teachers get excited about technology in the classroom once they begin to see its potential benefits.

"There is a learning curve for teachers," McGarrity said via e-mail. "After the initial introduction phase, the teacher needs to adopt using the computer and Internet in their own personal life – shopping online, answering e-mail, and the like. Then the teacher gradually starts developing lessons. Once the teacher becomes comfortable using the computer in front of his or her students, the teacher realizes that the students are easily engaged and continues to create fun assignments with technology."

McGarrity said her school is fortunate enough to have many high-tech tools available to students, from laptop computers and robotics kits to video cameras and interactive Smartboards – touch-

sensitive digital whiteboards which display computer images and also allow teachers and students to draw with virtual ink and play touch-screen educational games. She also makes use of online videoconferencing software, which allows her students to interact with outside experts and guest speakers located hundreds of miles away.

While McGarrity's district has sufficient funding to make such technology available, less wealthy districts may not be so lucky. According to Joe Bean, a public affairs specialist with the Texas State Teachers Association, a lack of technology funding is a very real concern for many school districts in Texas – some of which are falling behind as a result. He said that having the money to pay for the technology itself is not enough.

“From a state level policy perspective, there's also the issue of where the money is going to come from for funding the IT people who keep the networks running and keep the computers working,” Bean said. “You may be able to cluster a bunch of smaller districts together and have an educational service center to do that, but in larger districts where you're talking about thousands or hundreds of thousands of students, you're going to need to have additional funding from the state for personnel.”

While Bean's group is lobbying the Texas Legislature to provide additional funding for classroom technology and personnel, Prairiland High's Phillips said schools also need to take a hard look at how they are using existing funds and prioritize to achieve the greatest benefit to their students.

“I would say that most districts actually have the money to do this,” Phillips said. “It's how they choose to use the money that is going to make the difference. All districts have some funding from the state that is specifically for buying technology. And if you took half the money that was spent on sports facilities, coaches' salaries, all that kind of stuff, and put it into good technology, every school could have lots of technology available to use. So, it's a matter of where schools choose to use their money.”

In some cases, utilizing new technology might actually help cash-strapped districts save money, said Bill Lewis, director of instructional technology at Seguin ISD. Lewis pointed to digital textbooks as the perfect combination of a superior technology that also makes sound economic sense.

“We still pump hundreds of millions of dollars into textbooks,” said Lewis. “Why buy something in print that we’re going to have to hang onto for seven or eight years which is just a brief anthology, when you can move to a digital format? It doesn’t even have to be online – it can be online, but it can just be a digital format that’s on a laptop. If you start mixing some of these things together, your price looks a whole lot better. If I had that content in digital form, all of a sudden over a five, six year period, with a \$400 laptop and digital textbooks, I’ve saved a whole lot of money.”

While teachers like McGarrity and Phillips agree on the benefits of having computers and other technologies in the classroom, some educators have lingering concerns about overreliance on these tools and the possible safety concerns of exposing students to the more unsavory elements of the Internet and the World Wide Web. McGarrity said that while some of her fellow teachers have begun to experiment with Second Life – the virtual universe which allows users to create avatars and interact with one another in a 3-D world – she has thus far steered clear of the site due to concerns about pornography and other inappropriate content.

Likewise, Seguin ISD’s Lewis said that his district blocks the availability of many Web sites from both teachers and students – including the enormously popular YouTube – because of the availability of risqué and violent videos and images. He added that many Seguin teachers do utilize a YouTube-like site called TeacherTube, which houses only videos of an educational nature.

According to McGarrity, it is important that teachers recognize technology for what it is – a tool to enhance more traditional forms of education, not replace them.

“Technology can be a bad thing in some classrooms,” said McGarrity. “If you use too much, you may be stifling student creativity – drawing, painting, dancing, and singing. Over-searching the Web, rather than classroom discussions would not be effective. The clickers that we use to get immediate quiz answers from students could also cut down on classroom discussions and creative writing. Teachers need to find happy mediums to using the technology.”

Lewis agreed, adding that it is the skills fostered by technology use that are most important to student development.

“It’s the whole process of thinking and troubleshooting and being able to create things on that kind of level – not just program operation,” Lewis said. “You’ve got to focus on the critical thinking skills. That’s what you shoot for and then you use the technology to do those kinds of things. That’s the key, because these kids are going to use technologies we can never prepare them for. In 12 years, it is going to be something different. In five years it’s going to be something different.”